MODELS

Compaq *StorageWorks*™ Enclosure 4300

Model 4314R: 190209-001

Model 4314T: 190210-001

Model 4354R: 190211-001

Model 4310R: 174631-B21

Model 4350R: 174630-B21

Ultra3 Single Bus I/O Module: 190212-B21

Ultra3 Dual Bus I/0 Module: 190213-B21

The StorageWorks Enclosure 4300 Family provides the following features:

- Ultra3 (LVD) data transfer rates (160 MB/s)
- 3U rack height
- Hot pluggable disk drives, power supplies, and fan pack
- Redundant fans
- Redundant power supply (optional on the 4314/4310)
- Single or dual bus I/O

OVERVIEW

The StorageWorks Enclosure 4300 is Compaq's newest Ultra3 SCSI disk drive storage enclosure. These enclosures deliver industry-leading data performance, availability, storage capacity, and upgradability to meet customers' demanding and growing storage needs. The drive carrier is designed to support the fastest current and next generation Ultra2 and Ultra3 hard drives on the same SCSI bus. The ease of upgrading the StorageWorks Enclosure 4200 to the StorageWorks Enclosure 4300 proves to our customers that Compaq provides the lowest cost of ownership, as well as the fact that technology transitions can be smooth without disrupting critical business environments.

The Compaq StorageWorks Enclosure 4300 family delivers numerous customer benefits including:

- **Higher Performance** – Ultra3 SCSI transfer rates combined with the highest spindle count per U of rack space allows the StorageWorks Enclosure 4300 to achieve the greatest I/Os per second.
- **Storage Capacity** – 3U rack form factor allows customer to achieve the maximum storage capacity per square foot in the data center
- **Upgradability** – Ultra3 single and dual I/O upgrade modules make upgrading the StorageWorks Enclosure 4200 to Ultra3 quick and easy.
- **Investment Protection** – With the ability to upgrade, as well as mix and match, existing Ultra2 components with Ultra3, Compaq makes technology transitions simple and cost effective, and has simplified the transition to the next generation SCSI protocol.
- **Reduced spares inventory** – Universal drives and drive carriers across Compaq's entire Ultra2 and Ultra3 product offering allow the same drives to be used in servers and external storage.

Compaq StorageWorks Enclosure 4300 family models

The StorageWorks Enclosure 4300 design allows for specific configurations tailored to the needs of all Compaq server customers. Five models are available today:

- Model 4314R – Rack-mountable 14 drive enclosure with single bus, single power supply
- Model 4314T – Tower mount 14 drive enclosure with single bus, single power supply, LCD monitor
- Model 4354R – Rack-mountable 14 drive enclosure with dual bus, dual power supply
- Model 4310R – Rack-mountable 10 drive enclosure with single bus, single power supply
- Model 4350R – Rack-mountable 10 drive enclosure with dual bus, dual power supply

Models 4314T, 4314R, and 4354R are universal drive enclosures and are supported behind Compaq Smart Array controllers, HSGx0 controllers, and adapters. Models 4310R and 4350R are not universal enclosures are only supported behind the HSG80 controller in an MA/EMA configuration.

Note: For complete compatibility information, refer to the Specifications section of the Compaq StorageWorks Enclosure 4300 Family QuickSpec.

KEY FEATURES

All models of the StorageWorks Enclosure 4300 Family have the following features:

- Ultra3 (LVD) support – Delivering data transfer rates up to 160 MB/s per channel
- 3U rack height
- Modular design allows the StorageWorks Enclosure 4300 to be used in any storage configuration from JBOD (Just a Bunch of Disk) to Smart Array storage enclosures to external RAID arrays.
- A common storage platform allows for future storage consolidation to the SAN.
- Award-winning innovative SCA (Single Connect Attach) direct connect drive carrier - provides better cooling and reliability for 10K and future 15K drives
- Hot pluggable disk drives, power supplies, and fans
- Redundant fans, redundant power supply and dual bus I/O module
  (Each Enclosure 4314T, 4314R, and 4310R comes with a single power supply that is sufficient to provide power to the enclosure and maintain normal operating levels. A second optional redundant power supply is recommended for higher levels of fault tolerance and availability.)
- Environmental Monitoring Unit (EMU) – Monitors environmental conditions within the enclosure and components such as the power supply and fans
- Easy removal of parts provides better serviceability. No tools are required!

Specific features of the StorageWorks Enclosure 4314T, 4314R, and 4354R include:

- Supports up to 14 (1-inch) Ultra3 Universal hard disk drives
- Provides storage capacity of up to 509.6 GB per enclosure (using 36.4 GB 1-inch disk drives)
- House up to 14 enclosures in one 42U rack for a single rack storage capacity of up to 7.13 TB of disk storage

Specific features of the StorageWorks Enclosure 4310R and 4350R include:

- Supports up to 10 (1.6-inch) Ultra3 Universal hard disk drives
- 1.6-inch disk drive form factor allows MA/EMA customers to get first access to future disk capacity points
- Provides storage capacity of up to 728 GB per enclosure (using 72.8 GB 1.6-inch disk drives)
- House up to 14 enclosures in one 42U rack for a single rack storage capacity of up to 10.1 TB of disk storage

PRODUCT HIGHLIGHTS

Upgradability

Upgrading a StorageWorks Enclosure 4200 to a StorageWorks Enclosure 4300 is as easy as swapping out the I/O module on the back of the unit. The I/O module is warm-swappable, therefore during the upgrade power to the unit can remain on, but all I/O operations need to be stopped to ensure that no data is lost during the upgrade.

Mix and Match

All Ultra3 devices from Compaq are compatible with previous Ultra2 devices so customers can mix and match components in the same storage enclosure or server. When Ultra2 devices and Ultra3 devices are found on the same Ultra3 SCSI bus, each Ultra2 device will transfer data up to 80 MB/s, while each Ultra3 device will transfer data up to 160 MB/s.

Note: Models 4310R and 4350R enclosures support the use of 1-inch Universal Ultra2 or Utlra3 disk drives with the addition of 0.6-inch drive extenders.

Hot Pluggable

Hot pluggable technology is designed into drives, power supplies and redundant cooling fans. Hot pluggable components can be replaced without powering down the storage system or stopping I/O operations. This feature significantly enhances data availability.

Auto SCSI ID Selection

SCSI ID is automatically set when a drive is inserted into a drive bay.

LED Indicators

Front panel LEDs indicate drive activity, required drive service, and power, giving a quick visual assessment of overall system storage status. LED status and fault indicators for the fans and power supplies are located in the back of the enclosure.

Rack Density

The StorageWorks Enclosure 4300 models have a 3U height.

PRODUCT HIGHLIGHTS *(continued)*

Environment Monitoring Unit (EMU)

Each StorageWorks Enclosure 4300 model is equipped with an EMU that constantly monitors the enclosure, the power supplies, and fans to ensure suggested operating tolerances are maintained.

Single Bus I/O Module

The single bus I/O module allows one SCSI channel to access all drives in the StorageWorks Enclosure 4300.

Dual Bus I/O Module

The dual bus I/O module allows two SCSI channels to access a single StorageWorks Enclosure 4300. This allows for greater fault tolerance (controller duplexing) or provides access from two different servers to two separate storage areas.

Fault Tolerance

With the dual bus I/O module, redundant power supplies and fans, the StorageWorks Enclosure 4300 family provides a high level of system availability. Using an internal or external RAID Array, the StorageWorks Enclosure 4300 family can be configured for RAID levels 0, 1, 0+1, 5.

Manageability

The StorageWorks Enclosure 4300 is managed by Compaq Insight Manager or StorageWorks Command Console, depending on the host controller.

Compatibility and Integration Testing

Intensive compatibility and performance testing with Compaq *ProLiant*™ severs and *AlphaServers*™ ensures the highest level of integration available in the industry on a Compaq server. For a complete list of supported Compaq servers and workstations, please refer to the QuickSpecs and/or User Guide of the array controller or Host Bus adapter that you are planning to use. The list of supported array controllers and SCSI adapters is provided under “Related Options, Controllers.”

STORAGEWORKS ENCLOSURE 4300 SPECIFICATIONS

Protocol Support	Wide Ultra3 (LVD) Wide Ultra2 (LVD)
O/S Support	Defined by specific Compaq array controller or SCSI adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or SCSI adapter
Dimensions (HxWxD)	
Tower	22.5 x 13.25 x 23 in / 56.7 x 33.9 x 57.96 cm
Rack	5.2 x 19 x 20.5 in / 13.1 x 47.88 x 51.66 cm
Shipping Dimensions (HxWxD)	
Tower	34.25 x 14.5 x 31.25 in / 86.31 x 36.54 x 78.75 cm
Rack	34.25 x 14.5 x 31.25 in / 86.31 x 36.54 x 78.75 cm
Weight	
Tower	93 lbs/42.8 kg
Rack	68 lbs/30.9 kg
Redundant Power Supply	5 lbs/2.3 kg
LED Indicators (On Front Panel)	EMU Status LED (left) Enclosure Power LED (Middle) Fault LED (Right)
Drive LED Indicators (On Drive Trays)	Drive LED (Top) On Line LED (Middle) Drive Failure LED (Bottom)
Enclosure LED Indicators (back of unit)	I/O Module (top) EMU (middle) Power supplies (bottom)
Input Requirements	
Nominal Line Voltage	110 to 240 VAC
Range Line Voltage	90 to 264 VAC
Line Frequency	47 to 63 Hz
Typical Input Current	2.3A at 120 VAC
Relative Humidity (non-condensing)	
Operating	10% to 90%
Shipping	5% to 90%
Controllers and Adapters Supported	
Models 4314T, 4314R, 4354R:	Smart Array 4200 Controller Smart Array 3200 Controller Smart Array 431 Controller Smart Array 221 Controller HSG80 Controller HSG60 Controller 64-bit Dual Channel Wide Ultra2 SCSI Adapter 64-bit Dual Channel Wide Ultra3 SCSI Adapter 1 channel Wide Ultra2 Adapter (AlphaStations) 1 channel Wide Ultra2 Adapter (AlphaServers)
Models 4310R and 4350R:	HSG80 Controller **Note**: See your server and controller compatibility matrix for details on controller and server compatibility.
I/O Module Connector	Very High Density Cable Interconnect (VHDCI)
Power	377 Watts per supply (load)

STORAGEWORKS ENCLOSURE 4300 SPECIFICATIONS
(continued)

BTU (220 Volts)

Single power supply 14 drives	1164 BTUs/hour
Single power supply 5 drives	536 BTUs/hour
Single power supply 1 drive	273 BTUs/hour
Dual power supply 14 drives	1232 BTUs/hour
Dual power supply 5 drives	625 BTUs/hour
Dual power supply 1 drive	352 BTUs/hour

Temperature Range

Operating	50° to 94°F/10° to 35°C°
Shipping	–40° to 151°F/–40° to 66°C

Note: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

Product Kit Contents

Model 4314: Single power supply, single bus I/O module, 13 drive blanks, warranty card, mounting hardware, AC power cord, Enclosure 4300 user guide, EMU booklet, Compaq *SmartStart*™ CD Kit, SPD documentation CD, and one 12-ft VHDCI to VHDCI SCSI cable

Model 4354: Redundant power supplies, dual bus I/O module, 13 drive blanks, warranty card, mounting hardware, AC power cord, Enclosure 4300 user guide, EMU booklet, SmartStart CD Kit, SPD documentation CD, and two 12-ft VHDCI to VHDCI SCSI cables

Model 4310: Single power supply, single bus I/O module,10 drive blanks, warranty card, mounting hardware, AC power cord, Enclosure 4300 user guide, SmartStart CD Kit, and SPD documentation CD, two IEC-C13 IEC-C14 power cords

Model 4350: Redundant power supplies, dual bus I/O module,10 drive blanks ,warranty card, mounting hardware, AC power cord, Enclosure 4300 user guide, SmartStart CD Kit, and SPD documentation CD, two IEC-C13 IEC-C14 power cords

Note: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

Note: A different SCSI cable may be required when the StorageWorks Enclosure 4300 is intended for connection to an HSG80 controller in a Model 2200 controller shelf or a host-based adapter on an Alpha server. See the related options section for cable ordering information.

Warranty

StorageWorks Enclosure 4300 family: Three-year limited warranty

Note: Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details.

Hard drive Pre-Failure Warranty: When used with any one of the StorageWorks Smart Array Family controllers and monitored under Compaq Insight Manager (v4.20 or later), Compaq hard drives are supported by a Pre-Failure (replacement) Warranty.

Note: Pre-Failure Warranty is available on all Compaq *Prosignia*™ and Compaq ProLiant servers using Compaq Insight Manager v4.20 or later, and covers Pentium® Pro processors, ECC memory, server hard drives, and external storage enclosure hard drives (except the 535 MB Fast-SCSI-2 hard drive) using Compaq IDA, IDA-2, Compaq SMART SCSI Array Controllers, Compaq SMART-2 Array Controllers or Compaq Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details.

SERVICE & SUPPORT, CAREPAQ AND WARRANTY INFORMATION

Software Product Services

- Standalone telephone support
- Rights to new license version
- Media and documentation updates

Hardware Product Services

- Installation services
- On-site maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URLs listed below:
http://www.compaq.com/services/carepaq/cp_installation.html

http://www.compaq.com/services/carepaq/cp_hardware.html

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4 hours
- Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days
- Duration - Select duration of coverage for a period of 1, 3, or 5 years

CarePaq Information

Sample part numbers:

- FM-**XHW-36, 3 year, uplift to 5 x 9, Next Day Response
- FM-**4HR-36, 3 year, uplift to 5 x 9, 4-hour Response
- FM-**724-36, 3 year, uplift to 7 x 24, 4-hour Response

** represents a two digit product specific code

- CarePaq is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.
- CarePaq is not available for less than the product's warranty duration.
- CarePaq is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.
- CarePaq services are prepaid.

For additional CarePaq (hardware & software) information, as well as orderable part numbers, please refer to the URL listed below:

http://www.compaq.com/services/carepaq/index.html

Components

The following brick level options/components do not have individual CarePaqs. These items will be included in product CarePaqs into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

CONFIGURATION INFORMATION

Product	Part Numbers	Shipping Dimensions	UPC Code
StorageWorks Enclosure 4314T	190210-001	25.25 x 12.5 x 23.5 in/	720591469795
StorageWorks Enclosure 4314T (Int'l)	190210-B31	64.1 x 31.8 x 59.7 cm	720591469801
StorageWorks Enclosure 4314T (Japan)	190210-291		720591469818
StorageWorks Enclosure 4314R	190209-001	25.25 x 12.5 x 23.5 in/	720591469566
StorageWorks Enclosure 4314R (Int'l)	190209-B31	64.1 x 31.8 x 59.7 cm	720591469583
StorageWorks Enclosure 4314R (Japan)	190209-291		720591469788
StorageWorks Enclosure 4354R	190211-001	25.25 x 12.5 x 23.5 in/	720591469825
StorageWorks Enclosure 4354R (Int'l)	190211-B31	64.1 x 31.8 x 59.7 cm	720591469832
StorageWorks Enclosure 4354R (Japan)	190211-291		720591469849
StorageWorks Enclosure 4310R	174631-B21	25.25 x 12.5 x 23.5 in/ 64.1 x 31.8 x 59.7 cm	720591333454
StorageWorks Enclosure 4350R	174630-B21	25.25 x 12.5 x 23.5 in/ 64.1 x 31.8 x 59.7 cm	720591333447
Ultra3 Single Bus Upgrade I/O Module	190212-B21	12.75 x 8 x 3.75 in/ 32.13 x 20.16 x 9.45 cm	720591469856
Ultra3 Dual Bus Upgrade I/O Module	190213-B21	13.25 x 8 8.5 in/ 33.39 x 20.16 x 21.42 cm	720591469863

RELATED OPTIONS

Controllers	Part Numbers	UPC Code
Smart Array 5302/32	166207-B21	720591292225
Smart Array 5302/64	124992-B21	743172866172
Smart Array 5304/128	(158939-B21)	720591223465
Smart Array 4200 Controller	295636-B21	743172512925
Smart Array 3200 Controller	295643-B21	743172514004
Smart Array 431 Controller	127695-B21	743172872142
Smart Array 221 Controller	388099-B21	743172722867
HSG80 Controller (HSG80 connection to the model 4300 requires the use of the Model 2200 controller shelf: 135820-B21)	176622-B21	720591351335
HSG60 Controller (HSG60 connection to the model 4300 requires the use of the Model 2100 controller shelf: 187740-B21)	174134-B21	613326185230
64-bit Dual Channel Wide Ultra2 SCSI Adapter	348757-B21	743172625199
64-bit Dual Channel Wide Ultra3 SCSI Adapter	129803-B21	743172876379
1 channel Ultra2 (LVD) Adapter (AlphaServers)	136237-B21/ SN-KZPCA-AA	743172900562
1 channel Ultra2 (LVD) Adapter (AlphaServers)	3X-KZPCA-AA	613326184219
Other Options		
StorageWorks Enclosure Redundant Power Supply Option	119826-B21	743172825544
StorageWorks Enclosure Ultra3 Single Bus I/O Module	190212-B21	720591469856
StorageWorks Enclosure Ultra3 Dual Bus I/O Module	190213-B21	720591469863
StorageWorks Enclosure Tower to Rack Conversion Kit	150213-B21	743172948182
39-ft (12m) VHDCI to VHDCI SCSI Cable	150214-B21	743172948199
24-ft (7m) VHDCI to VHDCI SCSI Cable	164604-B21	720591275983
Compaq Rack Model 7142	165753-001	743172126290
Compaq Rack 9142	120663-B21	743172836564
Compaq Rack 9136	120664-B21	743172836601
Compaq Rack 9122	120665-B21	743172836649

Note: Certain power support and cooling restrictions apply when housing a maximum number of Model 4314R or Model 4354R enclosures in one of the supported Compaq racks. Please refer to http://www.compaq.com/products/storageworks for more information or consult the Compaq Customer Support Center at 1-800-345-1518 for details.

RELATED OPTIONS *(continued)*

Hot Pluggable (LVD) Hard Drives

18.2-GB Pluggable Ultra3 Universal 15,000 rpm Drive (1″)	188122-B22	720591389123
9.1-GB Pluggable Ultra3 Universal 15,000 rpm Drive (1″)	188120-B22	720591389109
36.4-GB Pluggable Ultra3 Universal 10,000 rpm Drive (1″)	176496-B22	720591346522
18.2-GB Pluggable Ultra3 Universal 10,000 rpm Drive (1″)	142673-B22	743172918093
9.1-GB Pluggable Ultra3 Universal 10,000 rpm Drive (1″)	142671-B22	743172918055
18.2-GB Pluggable Ultra2 Universal 10,000 rpm Drive (1″)	128418-B22	743172874122
18.2-GB Pluggable Ultra2 Universal Drive (1″)	388144-B22	743172800718
9.1-GB Pluggable Ultra2 Universal 10,000 rpm Drive (1″)	328939-B22	743172798985
9.1-GB Pluggable Ultra2 Universal Drive (1″)	123065-B22	743172853745
72.8-GB Pluggable Ultra3 10,000 Drive (1.6”) (72.8-GB Pluggable drives only compatible with Models 4310R and 4350R)	176494-B21	720591346508
0.6″ Drive Height Converters (package of 4)	148649-B21	720591346522

Note: For complete compatibility information, refer to the Compaq SCSI Hard Drive Compatibility table located at http://www.compaq.com/products/servers/storage/compatibility.html and http://www.compaq.com/products/server/storage/non-hotplug-compatibility.html. Using hard drives in unsupported configurations will result in voiding of the warranty and could result in damage to the drive and/or loss of data.

SCSI Cable Options	Part Numbers	UPC Code
1M SCSI cable for connection to the Model 2200 Controller Shelf	168256-B21	720591304508
2M SCSI cable for connection to the Model 2200 Controller Shelf	168257-B21	720591304515
3M SCSI Cable for connection to the Model 2200 Controller Shelf	188505-B21	743172825544
5M SCSI cable for connection to the Model 2200 Controller Shelf	400983-005	743172752826
10M SCSI cable for connection to the Model 2200 Controller Shelf	400985-010	743172752840
12′ VHDCI – 68-pin SCSI Cable	341177-B21	743172660848
1M SCSI 68HD Cable (This SCSI cable is only intended for use with the KZPCA-AA host bus adapter.)	BN38C-01	None
2M SCSI 68HD Cable (This SCSI cable is only intended for use with the KZPCA-AA host bus adapter.)	BN38C-02	None
3M SCSI 68HD Cable (This SCSI cable is only intended for use with the KZPCA-AA host bus adapter.)	BN38C-03	None
5M SCSI 68HD Cable (This SCSI cable is only intended for use with the KZPCA-AA host bus adapter.)	BN38C-05	None
10M SCSI 68HD Cable (This SCSI cable is only intended for use with the KZPCA-AA host bus adapter.)	BN38C-10	None
12-ft VHDCI to VHDCI SCSI Cable	341175-B21	743172660824
24-ft VHDCI to VHDCI SCSI Cable	164604-B21	720591275983
39-ft VHDCI to VHDCI SCSI Cable	150214-B21	743172948199